

DEFINITION: NAVAL ELECTRICAL ENGINEER

Professional knowledgeable in the area of communication of weapon control systems. He studies and plans detection and control systems, he is able to plan, construct, install, maintain, repair, operate, and evaluate systems, and he looks for solutions inside actual technical parameters and the principles of sustained development.

Occupational outline for an electrical engineer.

- ***Plan, operate, and manage projects***
- ***Command units on land and sea***
- ***Designing, selecting, maintaining, and repairing electrical communication and control equipment.***
- ***Inspector***
- ***Executive level positions***

Naval Electrical engineering program

Updated 2005

1. Naval Electrical Engineering Program.

2. Courses in other disciplines.

3. Course content.

Plan of study for an electrical engineer

SEMESTRE I			SEMESTRE II			SEMESTRE III		
Seamanship	40	2	Computers I	48	2	Tactics I	48	2
Naval Orientaion	32	1	Rights of the Seas and Rivers I	40	2	Mechanical physics	64	4
Weapons	40	2	Math I DIFERENCIAL Calculus	80	4	Math II Integral Calculas	72	4
Methods of studying	40	2	Constitutional Rights	48	2	Naval Weapon Systems	48	2
Communication	32	1	River Operations	32	1	English by level	32	1
Costal Navigation	48	2	Statistics	48	3	Lab: Mechanical Physics	32	1
Leadership	40	2	Accounting I Pinciples	48	2	Tactics II	40	2
Techniques of expressoin	40	2	Administration I	48	2	Computational tools	32	1
DH. DIH(?) and armed conflict	48	2	Military Prisoner rights	32	1	Electromagnetic communications	24	1
Naval History I	48	2	English by level	32	1	English by level	32	1
Ethics	16	1				General Oceanography	32	1
Knowledge of Tactics	40	2						
TOTAL	464	21	TOTAL	456	20	TOTAL	456	20

Plan of study for electrical engineer

SEMESTRE IV			SEMESTRE V		
Linear algebra	48	3	Electricity I	48	3
Multivariable calculus	72	4	Physics of electricity	64	3
Stability	40	2	Math IV Differential equations	72	4
Weapon sensor systems	48	2	Lab: Electricity I	16	1
English by level	32	1	English by level	32	1
Lab: Physics of heat	32	1	Electronic devices(?)	48	3
Physics of heat and waves	64	4	Electricity II	48	3
Sonar weapon systems	40	2	Lab Electricity II	16	1
Funadamentals of motors	32	2	Lab: Physics of electricity	16	1
English by level	32	1	English by level	32	1
epistemology	24	1	Electronic navigation	48	3
			Lab: Electronics I	16	1
TOTAL	464	23	TOTAL	456	25

Plan of study for electrical engineers

SEMESTRE VI			SEMESTRE VII			SEMESTRE VIII		
Military Ethics	32	1	Electromagnetism. I	48	3	Disciplinary procedures and ADM	24	1
NAVAL auxiliary machinery	48	2	Electronics II analogue	48	3	Microprocessors	48	3
Astronomical navigation	48	3	Lab: electronics II	16	1	ANTENAS	40	2
Maneuvers	40	2	Math SUP I: SERIES and others	64	3	Electronics: optics	40	2
Military Intelligence I	32	1	English by level	32	1	Sonar Systems	40	2
Military Intelligence II	32	1	Electromagnetism .II	48	3	Automatic control I	48	3
General meteorology	40	2	Electrical measurements	40	2	RADAR	48	2
Physical regime	48	2	Electronics III: DIGITAL	48	2	Networks	40	2
General Logistics	48	2	LAB. ELECTRONICS III	16	1	Applied electronics	40	2
Leadership II	32	1	Communications I	48	3	LAB: applied electronics	16	1
Damage Control	64	3	Special Weapon Systems	48	2	Elective I	40	2
						Investigation principles	24	2
TOTAL	464	20	TOTAL	456	24	TOTAL	448	24

Subjects to Study in the exchange

ASIGNATURAS	HORAS	CRED
Microprocessors	48	3
Processing digital signals	48	2
Electricity II	48	2
Electricity Lab II	16	1
Communications I	48	3
Communications II	40	2

Course Contents

Microprocessors

General Objective: Enable the students gain a basic understanding of the architecture of microprocessors and microprocessor systems (microcontrols among others), their supporting theories, and develop their own experiences with practical electronic microprocessors.

Course contents:

- ***Introduction.***
- ***Architecture of microprocessor systems and internal architecture of microprocessors.***
- ***Programming, types of instructions, and special programs.***
- ***Microcontrols.***
- ***Interface circuits.***

Course contents

Electronics II

General Objective: Enable the student to learn the supporting theories and develop their own experiences with electronic systems (analogue and discrete) based on amplified operations.

Course contents:

- ***Effects of frequency.***
- ***Theory of operational amplifiers.***
- ***Operational amplifiers with negative refeeding.***
- ***Linear circuits with operational amplifiers.***
- ***Non-linear circuits with operational amplifiers.***

Course contents

Communications I

General Objectives: Enable the students in the course to be in a capacity, at the end of the respective courses:-to know the characteristics and attributes of the circuits and elements that constitute a transmitting A.M. FM or PM. Sufficiently describe the relevant aspects of the methods of analogue transmission.

Subjects covered

- **Legislation about electromagnetism (?)**
- **Singular signals**
- **Noise**
- **Generalities of oscillators**
- **Characteristics of the amplitude modulation AM**
- **Broadcasting**
- **Angular modulation**
- **Stereo Broadcasting**
- **The phone**

Course contents

Communications II

General Objectives: *Enable students to be in a capacity, at the end of the course, to: Know the characteristics and attributes of the circuits and elements that make up an FM transmission.*

Differentiate the qualities that distinguish an analogue modulation, AM, Fm or PM digital modulations.

Subjects covered

- **FM Transmissions**
- **FM noise**
- **Lines of transmission**
- **Propagation of waves**
- **Antenas and guides of waves**
- **The television**
- **multichanneling**
- **Microwaves**
- **Satellites**

Couse Contents

Automatic control I

General Objectives: Enable the student to analyze, design and implement systems of automatic linear control.

Course Contents

- ***Introduction***
- ***Mathematical base***
- ***Mathematical systems of dynamic systems***
- ***Analysis of transitory results analysis of error in stationary state.***
- ***Analysis of the roots of place geometry.***
- ***Design of systems of control by means of the method of the results of place.***
- ***Analysis of frequency results.***
- ***Optimal quadratic control.***